

REMARKS

This is intended as a full and complete response to the Office Action dated January 15, 2004, having a shortened statutory period for response set to expire on April 15, 2004. Please reconsider the claims pending in the application for reasons discussed below.

Claims 1-38 are pending in the application. Claims 1, 3-38 remain pending following entry of this response. Claims 13-15 and 23-24 have been amended. Claim 2 has been cancelled. Applicants submit that the amendments do not introduce new matter.

Claims 1-38 stand rejected under 35 U.S.C. 102(e) as being anticipated by *Acharya et al.* (U.S. 6,477,534; hereinafter *Acharya*). Applicants respectfully traverse the rejection.

The present claims are directed to optimizing a query and recite calculating a cost for an execution plan. The cost for the execution plan is calculated on the basis of one or more vector quantities. *Acharya* has nothing to do whatsoever with query optimization, preparing execution plans, and calculating a cost of an execution plan. In fact, the terms of "optimization" and "plan" (i.e., execution plan or access plan) are not found anywhere in the "Detailed Description" portion of *Acharya*, and the term "cost" is used with a different meaning from the present claims. More specifically, *Acharya* is directed to a "method for generating an approximate answer to a query". (See, Abstract.) An approximate query answering system is a nontraditional query processing system that does not provide exact answers to queries, but rather determines an estimate of the exact answer. (See, column 1, lines 24-53.) The entire point of an approximate query answering system is to "minimize the number of accesses, or altogether avoid[s] accesses, to the base data" of a database, "thereby providing an approximate result in a time that is orders of magnitude less than the time required for computing an exact answer." (Column 7, lines 55-59.) As a result, optimization techniques (including determining an execution plan and a corresponding cost) applied in traditional query processing systems are not used in an approximate query answering system. *Acharya* makes this clear in that it states: "Fast approximate answers can be used in a more traditional role within a query optimizer for estimating plan costs

because a fast response time is required without an exact answer." (Col. 1, lines 47-50.) Thus, at most, *Acharya* suggests that the approximate answers generated by *Acharya* can be used as input to a query optimizer, making it clear that the method and ~~system of~~ *Acharya* are not themselves directed to optimization, execution plan determination and cost calculation. On this basis alone Applicants suggest that further elaboration on *Acharya* and the Examiner's characterization thereof is not required. However, for the sake of clarity Applicants provide the following additional arguments in response to the Examiner's action.

The Examiner suggests that the evaluation of execution plans is shown in TABLE 2. (Page 2 of Examiner's action.) Respectfully, Applicants submit that this characterization is incorrect. TABLE 2 "summarizes the use of Chebychev bounds of Eq. (17) in conjunction with various values for confidence p, with and without chunking." (Column 17, lines 65-67.) "Bounds" refers to the bounds on the confidence of an estimate. (Column 1, lines 53.)

The Examiner further suggests that each execution plan shown in TABLE 2 involves calculation of cost. (Page 2 of Examiner's action.) Again, Applicants respectfully submit that this characterization is incorrect. As noted above, calculating a cost of an execution plan is not taught, shown or suggested by *Acharya*, and the term "cost", as used to describe the system and method of *Acharya*, is in no way related to the cost of an execution plan. As stated by the Examiner himself, "cost in this case is the number of subsamples of data (referred to as "chunks") that must be taken from the database to obtain certain desired levels of confidence for the query results." Thus, "cost" as defined by the Examiner is quantity determinative of confidence in query results and has nothing to do with the cost of an execution plan.

Simply stated, *Acharya* discloses a method for generating an approximate answer to a query, which does not involve optimization and cost calculation. Thus, *Acharya* does not teach, show or suggest optimizing a query or calculating a cost for an execution plan. Therefore, the claims are believed to be allowable.

Having addressed all issues set out in the office action, Applicants respectfully submit that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,



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